

What is claimed is:

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1. A electrolyte composition for depositing tin or tin-alloy on a substrate, comprising one or more tin compounds, one or more acidic electrolytes, one or more alkylene oxide compounds, one or more polyalkylene glycols and optionally one or more additives.
 2. The electrolyte composition of claim 1 wherein the tin compound is selected from tin halides, tin sulfates, tin alkane sulfonate, tin aryl sulfonate, or tin alkanol sulfonate.
 3. The electrolyte composition of claim 1 wherein the tin compound is present in an amount in the range of from 5 to 100 g/L.
 4. The electrolyte composition of claim 1 wherein the acidic electrolyte is selected from alkane sulfonic acids, aryl sulfonic acids, sulfuric acid, sulfamic acid, hydrochloric acid, hydrobromic acid and fluoroboric acid.
 5. The electrolyte composition of claim 1 wherein the acidic electrolyte is present in an amount in the range of 10 to 400 g/L.
 6. The electrolyte composition of claim 1 wherein the alkylene oxide compound is selected from ethylene oxide / propylene oxide block copolymers, alkylene oxide condensation products of an organic compound having at least one hydroxy group and 20 carbon atoms or less, or compounds prepared by adding oxypropylene to polyoxyethylene glycol.
 7. The electrolyte composition of claim 1 wherein the alkylene oxide compound has an average molecular weight of from about 500 to about 10,000.
 8. The electrolyte composition of claim 1 wherein the alkylene oxide compound is present in an amount of from 0.1 to 15 mL/L.
 9. The electrolyte composition of claim 1 wherein the polyalkylene glycol is selected from polyethylene glycol or polypropylene glycol.
 10. The electrolyte composition of claim 1 wherein the polyalkylene glycol has an average molecular weight of from about 200 to about 100,000.
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11. The electrolyte composition of claim 10 wherein the polyalkylene glycol is present in an amount of from 0.1 to 15 g/L.

12. The electrolyte composition of claim 1 further comprising water.

Sub 92 13. The electrolyte composition of claim 1 wherein the additives are selected from reducing agents, grain refiners, brightening agents and mixtures thereof.

15 14. A method for depositing tin or tin-alloy on a substrate comprising the steps of contacting the substrate with the electrolyte composition of claim 1 and applying a sufficient current density to the electrolyte composition to deposit the tin or tin-alloy on the substrate.

15 15. A substrate having a tin or tin-alloy deposited thereon according to the method of claim 14.

15 16. The method of claim 14 wherein the current density is in the range of 1 to 2000 ASF.

Sub 93 17. A method for high speed electroplating of tin or tin-alloys comprising the steps of: a) utilizing high speed electroplating equipment comprising an electroplating cell; an overflow reservoir adjacent the cell; means for returning solution from the reservoir to the electroplating cell; means for directing a substrate to be plated from an entry point at one end of the cell to an exit at a second end of the cell; b) introducing an electrolyte including a basis solution of one or more tin compounds, one or more acidic electrolytes, one or more alkylene oxide compounds, one or more polyalkylene glycols and optionally one or more additive; and c) continuously electroplating substrates with tin or tin-alloy at a sufficient current density and at a sufficient temperature for high speed electroplating as the substrates pass through the electroplating solution within the cell.

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